

1. (Once Amended) A process for preparing polysulfides for use in a Kraft cooking liquor, comprising:

a) providing a liquor having therein sodium sulfide, oxygen and a transition metal catalyst; and

a<sup>2</sup> b) reacting the sodium sulfide with the oxygen in the presence of the transition metal oxide catalyst, with the concentration of the catalyst in the liquor ranging from 0.05 to 6.5 g/l, where the consumption rate of O<sub>2</sub> is at least 1.5x10<sup>-4</sup> moles/l/sec, such that a selectivity of polysulfides greater than 65% is achieved.

18. (Once Amended) A process for preparing polysulfides for use in a Kraft cooking liquor, comprising:

a) providing a liquor having therein Na<sub>2</sub>S, oxygen and a transition metal oxide; and

a<sup>3</sup> reacting the Na<sub>2</sub>S with the oxygen in the presence of the transition metal oxide, with a concentration of the metal oxide in the liquor ranging from 0.05 to 6.5 g/l, and where the consumption rate of O<sub>2</sub> is sufficient and the partial pressure of oxygen is controlled to achieve a selectivity of polysulfides greater than at least 85%.